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TO: COUNTY EXTENSION DIRECTORS AND AGENTS (VEGETABLE AND HORTICULTURE) AND OTHERS INTERESTED IN VEGETABLE CROPS IN FLORIDA

FROM: J.M. Stephens, Extension Vegetable Specialist

VEGETARIAN NEWSLETTER 80-7

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NOTE: Anyone is free to use the information in this newsletter. Wherever possible please give credit to the authors.
A. New Faculty Members

William M. Stall joined the Vegetable Crops faculty at Gainesville on June 20 as Associate Professor and Extension Specialist. He has been a County Agent in Dade County with primary responsibilities in vegetable production since 1974 and is well known to the industry. Bill's program area will be commercial vegetable production.

Bill received his BS from Ohio State University and MS and Ph.D. in Vegetable Crops from the University of Florida. We're pleased to have Bill with us in Gainesville.

Peter J. Stoffella joined the Vegetable Crops faculty at Ft. Pierce on June 16 as Assistant Professor. Peter received the BS at Delaware Valley College, MS at Kansas State University, and Ph.D. at Cornell University. He will be initiating a research program on the culture and management of vegetables. Welcome to Florida, Pete.

(Maynard)

B. New Southern Region, NJHA Director

Susan Gray has assumed the function of Director, Southern Region, National Junior Horticultural Association. She replaces Ray Livingston of Georgia who held this vital position for years. This is an additional task to Susan's already busy program.

(Stephens)

C. Tomato Grower's Institute

The nineteenth annual Tomato Grower's Institute will be held on Thursday, September 11 beginning at 9:15 a.m. at the Palm Beach County Agricultural Center, 531 North Military Trail, West Palm Beach. Raleigh S. Griffis is program coordinator. The full program will be in next month's "Vegetarian".

(Maynard)
II. COMMERCIAL VEGETABLE PRODUCTION

A. 24(c) State Herbicide Labels for Vegetables

Dr. Richard Lipsey has recently sent out from the Pesticide Coordinator's office a list of the 24(c) labels granted in Florida. These are now on computer tapes and will be published quarterly.

A 24(c) label is not a national label. It grants specific uses within this state. The approval for use is only for the product listed and for that formulation.

In other words, the same chemical manufactured by another company may not be legally used under the 24(c) guidelines. Also, a product labeled under a wettable powder formulation may not be legally used in the granular or emulsifiable concentrate form if not so formally listed.

24(c) labels also may be additional methods of application such as the aerial application rates. Be sure to consult the new labels for specific restrictions and information before they are used.

<table>
<thead>
<tr>
<th>Herbicides Granted 24(c) Labels for Vegetables in Florida</th>
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<tbody>
<tr>
<td>Green Beans</td>
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<tr>
<td>Carrots</td>
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<tr>
<td>Celery</td>
</tr>
<tr>
<td>Corn</td>
</tr>
<tr>
<td>Lettuce</td>
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<tr>
<td>Potato</td>
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</tbody>
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### Tomato & Pepper

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Rate of Application</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amiben 10%G</td>
<td>3 lb/A with 10-40 gals of water</td>
<td>Pre-emergence treatment</td>
</tr>
<tr>
<td>Devrinol 50W</td>
<td>2-4 lbs/A</td>
<td>3 lb/A with 10-40 gals of water</td>
</tr>
<tr>
<td>Devrinol 2E</td>
<td>0.5 to 1 gal/A</td>
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### III. HARVESTING AND HANDLING

#### A. Developing County Extension Marketing Programs - Packaging

Packaging of fresh market horticultural products is complex. Poor packaging causes extensive marketing losses at and beyond points of production. However, county horticultural agents can help their clients by increasing their knowledge of packaging problems, programs, and developments. They can also help local growers and shippers to evaluate packaging operations and shipping containers by conducting demonstration tests. Be sure to include a control treatment, generally the current practice or package being used. Interested? Contact Dr. Mark Sherman if you want help on this.

The Packaging Compromise, The Cost of Protection
(Reprinted from California Cooperative Extension Perishables Handling No. 43, June 1979).

Packaging of fresh market horticulture commodities is presently very complex, involves much compromise, and increases the cost of marketing far more than is necessary. Packaging could readily be greatly simplified if only certain problem areas could be resolved. Solutions must include unifying the packaging interest of the very heterogeneous fresh produce producing, distributing, and marketing industry; bridging vested interest, conflicts, and competition among both users, and suppliers of packaging materials; resolving certain problems related to transportation, costs, and waste in packaging materials; effecting greater cooperative efforts between government and industry in focusing on major problems; and reducing and simplifying the laws, regulations, and wording used in such that affect both suppliers and users of packaging materials. Resolving these problems can benefit products packaged, the industry that produces and markets fresh horticultural commodities, the industry that provides packaging and related supplies and services, and benefit society in general with both short and long range benefits.

The tremendous number of individual sizes, shapes, designs, and construction of fresh produce containers used in the world today is probably the most important problem currently confronting both suppliers and users of packaging material in the fresh produce industry.
The various ways in which the several functions of a package are viewed by the fresh product shipping, distribution, and marketing industry, and by the packaging industry and its allies, are major causes of packaging problems, and the many compromises effected in protecting fresh produce. Consider them as solvable problems and they become manageable.

The very heterogenous composition of the fresh product producing, distribution, and marketing industry, is probably the most important factor responsible for the very large numbers of produce containers used in the world today. For example, in the United States alone, over 400 different sizes, shapes, etc. of produce packages are used. The magnitude of this heterogeneity can be visualized if we consider the size and geographical distribution of the industry, the various sizes, organizations structures and setups of individual entities involved, the numbers of commodities, maturities, and ripeness classes shipped, the makeups and distribution of the markets shipped to, the composition of the consuming public in each market. Lastly, we cannot neglect the factor of adherence to tradition, both as it applies to individual segments within the industry and consuming publics, and to the industry in total. This very broad composition of our industry presents major, but not insurmountable, obstacles in standardizing shipping containers in democratic societies.

Vested interests which occur in many forms, are a major problem both within the fresh produce industry, and in those industries supplying packaging materials and related services. For example, within the packaging industry, there are vested interests among various divisions, or functions, within companies that determine materials content, materials and package testing procedures and standards, and the cost to each industry segment involved. Between the packaging and fresh produce industry, there is a major area of common interest in the large amount of capital invested in presently used packaging facilities, and equipment, and the large capital investments needed to change to an improved or better container and container handling system. Within the produce shipping, distribution, and marketing industry vested interests occur as tradition, produce identification and fear of losing identity in the market place, investments in package inventories and packaging equipment, freight rate advantages, and fear of labor reactions to potential improved handling methods or procedures. There are, however, numerous examples of progress throughout the industry to resolve these vested interests.

Materials waste in the manufacture of packaging materials is a major problem. Although manufacturers want to minimize the waste, compliance with customers' specifications for packages guarantees a certain amount of waste. The unproductive time required to change equipment to produce specific designs of containers for various shippers is a form of expensive, though indirect, waste. Most of us
probably consider only packaging wastes as the amount viewed as used containers at destination markets. The magnitude of, exact causes, and solutions to the destination packaging materials waste problem are viewed differently by different agencies and groups, both within and between government and the packaging industry. In many countries, including the United States, recovered paper waste and related products are used in the manufacture of fibreboard containers and other paper products.

What may appear to the general public as a simple problem of recycling packaging wastes is far from that. In Milwaukee, Wisconsin a major container manufacturer operates the nation's largest and most complete garbage recycling center. Their results indicate that source reduction concepts postpone solid wastes problems but do not solve them, that municipal recycling centers are technically and economically feasible, extensive opportunities exist for improving this technology, and the economies of recovering fuel through recycling centers will improve as the cost of alternate fuels increase.

Greater cooperative industry-government efforts focused on major packaging problems could help reduce present packaging compromises. Some important problems needing such cooperative effort include:

1. Raw product availability and use for packaging materials----they can't be considered as an indefinite supply.

2. Energy used in producing, using, transporting, and recycling or disposing of packaging materials and packages compared to the value received from their (packages) use.

3. Pollution problems in disposing of packaging materials waste.

4. Physical, economic, and biological studies needed to develop a minimum number of modular shipping containers for fresh market horticultural products. Though considerable effort is already devoted in this area, much more is needed.

5. Development of more useful and acceptable tests and testing procedures to evaluate produce packaging materials. There is considerable conflict and suspicion (of each others intents) by both industry and government. This is understandable, but it should not be an unsolvable problem.

Benefits

There are many benefits available from solving these packaging problems. These include benefits to commodities packaged (better protection); benefits to the fresh produce shipping, distribution, and marketing industry (lower costs, better handling, improved performance
standards, and improved product quality presented to consumers; benefits to the packaging materials supplying and servicing industries (greater efficiencies and reduced per unit costs); and benefits to the general public (better quality products, reductions in cost of packaging materials and waste disposal, improved waste disposal systems, conservation of energy and natural resources, and reduced pollution).

New developments and trends continue to be developed in the packaging materials and handling industry. These include new packaging materials; closing materials and equipment; faster and more efficient packaging equipment (some of which is mobile); new testing concepts, ideas, and procedures, including use of computer programming to evaluate container needs and performance; and the use of better designed and conducted industry experimentation and testing.

Pallet Exchange Programs, such as the GPC (Grocery Pallet Council) which involve private, suscribed membership and pallet ownership and redistribution are being developed in many countries. These apparently are having some membership and financial difficulties, but hopefully they will be overcome in the near future.

Both government and industry are developing new views towards packaging laws and regulations to make them more effective. Government is listening more to industry's views and needs. Industry is listening more to government and to the general public through its reaction to such things as chemical additives, packaging waste, and excessive costs. The shipping industry is convinced for the need to palletize, or unitize. There is also an increasing awareness of need for reducing the number of sizes and shapes of produce shipping containers used to a minimum number of standardized, modular containers. Gradually, we are accepting a standard size pallet or slip sheet of 40 inches times 48 inches (100 centimeters X 120 centimeter). In the United States, we are striving for two standard lengths and widths of containers, with three variable depths. In the Organization of Economic Cooperation and Development (OECD) four container sizes (that is length and width only) are recommended for international trade of fresh fruits and vegetables. These four container sizes provide for 100% utilization on a 100 centimeter X 120 centimeter pallet. The layer concept of ordering commodities, is now being suggested, and to some extent used, in mixed loads from shippers to receivers, and from distribution centers at terminal markets to chain store warehouses to retail outlets. In affecting these developments, we need to discard old traditional concepts of the numbers of product units of weights that are packed in shipping containers. For example, a head of lettuce probably doesn't care if it is packed with 19 or 23 other heads in a carton; tomatoes probably don't care if they are packed 60 or 67 or 83 in a carton. We could go on ad infinitum with such examples. Retail produce persons and consumers don't care about
the number of product units per container when the products are subsequently displayed at retail, especially if they are presented in bulk displays. We can help retailers by developing the needed information on the numbers and/or weights of product units in each modular container size. This would help expedite the acceptance of such modular containers by all segments of the fresh produce shipping, distribution and marketing industry. Some progress has already been made along this line in Florida and more is planned, both in Florida and other states. This total development offers realistic opportunities to produce shipping, distribution, and marketing industries and their allies in all countries to significantly contribute to better, more efficient packaging at minimal cost, and with beneficial compromise.

Presently, industry is carrying most of the burden for this development in the United States, whereas in many other countries government is primarily responsible. In either case, the packaging compromise involved can be beneficial to us all, and at reduced cost for protection of fresh market horticultural commodities.

(Kasmire)

IV. HOME VEGETABLE GARDENING

A. Closing Out The Spring Garden

The end of July brings to a close most spring vegetable gardens in Florida. Of course, there will be some crops still hanging on and these should be kept going as long as desired. However, many gardens have become over-grown weed patches interspersed with bare stalks of old bean, squash, pepper and tomato plants.

Closing down the spring vegetable garden is somewhat like packing up to go home after a nice long vacation. It is certainly not as much fun as getting started, but it has to be done.

1. Pull and destroy old, picked-over vegetable plants. They may be cut into the soil and allowed to rot, but it is best to remove and burn diseased plants.

2. Hoe, pull-up, and destroy the seasonal build-up of grasses and weeds. Clean up around the edges of the garden also (along fences and ditches).

3. Remove, clean, and store reusable garden labels.

4. Remove, clean and store tomato stakes, cages, and other supporting devices for future use.
5. Clean, dry, roll up, and store reusable plastic mulch. Salvage other mulching materials wherever practicable.

6. Knock down old beds with a spade, plow, or rototiller; completely level the garden site.

7. Broadcast seeds of a cover crop over the entire plot and lightly rake or otherwise work into the upper one to two inches of soil surface. Among the best choices for summer cover crops in Florida are southern peas and hairy indigo.

8. Gather up all tools and equipment; clean, oil, repair, and store for the next season. Pay special attention to equipment with moving parts such as sprayers, dusters, planters and power tools.

9. Return borrowed tools to neighbors (include a few of your favorite canned vegetables).

10. Properly store unused portions of chemical pesticides and fertilizers. Store only in original containers. Make sure labels are legible and in good shape to be read later. Store in a clean, dry place out of the reach of children. Follow all safety precautions.

11. Remove, drain and clean all irrigation equipment such as hoses, sprinklers and trickle kits. Store for future use.

12. Unused portions of seeds may be saved by storing in refrigerator or other cool, dry place. However, fresh new seeds often pay off, especially when compared with improperly stored older seeds.

13. Gather all gardening literature and file for next season.

14. Take a few minutes to jot down observations of both good and bad practices encountered - reminders of things to do next time and others to avoid (outstanding varieties, etc.).

15. Get the soil tested during the off-season if plant nutritional imbalances were encountered or suspected.

16. Continue care and maintenance of the compost pile.

While these are not all of the things to be done at the end of a garden season, they will help make the continuation of your gardening experience more pleasant from one season to the next. There is not much time to spare between the spring garden wind-down and the start of the fall garden. So start thinking of plans for the next garden, even as the last tool is stored away.

(Stephens)
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B. Early Growth Stages of Cabbage

Recent studies (Strandberg: FSHS Proc. 92:1979) have established four distinct growth stages that cabbage goes through from seeding to harvest. These stages were observed with the 'Rio Verde' variety planted at Sanford, Florida. Seeds were sown October 16 in a seedbed; from these seedlings, transplants were set out 42 days later on November 27.

The four stages of growth detected and reported were:

Stage 1. Seeding - beginning with emergence to the 5-6 leaf stage. In this stage the cabbage plant is established. Leaves that are produced during this stage do not reach a large size and are usually dropped as the plant begins to form a head. In seedbeds, severe competition and crowding from other plants slows growth near the end of this stage.

Stage 2. Transplant - beginning at the 5-6 leaf stage and lasting through 6-8 leaf stage. Plants grow in size and new leaves begin to form a horizontal rosette type of growth. If transplanted, the plant may slow down in growth and development for 5-7 days during ideal conditions - longer if improperly transplanted or cared for.

Stage 3. Cupping - Plants have formed the basic frame that will support growth of the head. Leaves begin to enlarge and the first upright leaves that will form the protective head wrapper leaves are produced. Total plant size and mass increases rapidly. In this cupping stage, the leaves that will appear on the harvested product are developing so should be watched carefully for any needed protective action.

Stage 4. Heading - the upright wrapper leaves enlarge and the head begins to develop from the inside out. The leaves that will become the outer head leaves curve over to cover the head. Like the wrapper leaves, these will need to be protected. No more leaves are evident because new ones are being produced from tissue inside the head and will continue to be produced until the head is harvested. This is a period of great enlargement of the cabbage plant.

An understanding of the developmental stages of growth of the cabbage is helpful in determining both care and culture of this vegetable.

(Stephens)
C. Know Your Minor Vegetables - Horseradish tree

While the horseradish tree (either *Moringa oleifera* or *Moringa pterygosperma*) is not a true vegetable by definition, its parts are used as a vegetable, justifying its inclusion here. The name derives from the roots, which taste like horseradish and which are so used as a substitute. It is also known as ben tree and coatli.

The flowers, shoots, and foliage are edible as "greens". Cattle are particularly fond of them. Young pods are cooked in curries. Seeds, which taste like peanuts when fried, are eaten, but they contain an alkaloid, which limits their use. The unripe pods, known as "susumber" or "drum sticks", are cut up and boiled like beans. They are available from delicatessens in tins, but the outsides are extremely hard and woody and impossible to eat; one has to pick them up and eat the mucilaginous inside and pits which are lightly hot and delicious. Upon pressing, the seeds yield an oil called ben oil which is used by watchmakers, and by perfumers who extract fragrances from plants. This non-drying oil of ben is also used for oiling machinery, as salad oil, and in soaps. The corky bark yields a gum used in India to print calico.

The deciduous, dry-land tree is sometimes mistaken for a legume. It has drooping branches with alternate, fern-like leaves, 9 to 24 inches long, divided two or three times, having many oval leaflets, each less than an inch long. The one-inch wide white fragrant flowers are borne in loose clusters in the leaf axils. The calyx is five-parted; there are 5 petals, with the lower ones bent back; 10 stamens, 5 with anthers and 5 without. The pods are narrow, three to six angled up to 18 inches long, containing a row of triangular dark brown winged seeds. The flowers and bean pods are borne continuously on this 25 foot tall tree.

The horseradish tree comes from eastern India, but is widely grown as an ornamental in many tropical countries. In Mexico, it is known as coatli. It is sometimes planted in southern Florida, (from Tampa to Cocoa and south) where it is easily propagated from cuttings.

(Stephens)